Mission Restoration Project

Range Resource Report

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for:
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Figures

Regulatory Framework

Land and Resource Management Plan

The Okanogan National Forest Land and Resource Management Plan (LRMP) (USDA Forest Service 1989) lists Forest Management Direction. Specifically, with respect to the Mission Restoration project, the direction for the Range Management Program is: Coordination in short-term and long-term planning between grazing livestock use and other resource management is the primary program focus *and* the transportation system should be adequate for logging, post-sale activities and protection, and coordinated with the needs of range and other resources. The range goal is: Intensely manage range resources to achieve a high level of range outputs while protecting the basic productivity of the land and providing for the production of wildlife, recreation opportunities, and other resources. The desired future conditions are: Roads necessary for resource management will essentially be in place *and* Grazing will continue in areas planned for range use.

The LRMP provides standards and guidelines for Range and is also amended for Range resources incorporating the standards and guidelines for The Northwest Forest Plan(USDA and USDI 1994, 1995, 2007).

Applicable Management Area direction is listed below.

Management Areas

The Mission Restoration Project Analysis Area is within Management Areas 5, 14, 17, 25, and 26.The following Management Area Prescriptions apply to range:

Management Area 5**:**

- MA5-11A: Manage commercial livestock to reduce conflicts with recreationists.
- MA5-11B: Eighty-five percent of the annual available browse on winter range shall be for wildlife and 15 percent for domestic livestock.

Management Area 14:

- MA14-11A: Eighty-five percent of the annual available browse on winter range shall be for wildlife and 15 percent for domestic livestock.

Management Area 17:

- MA17-11A: Domestic livestock grazing should generally be excluded from developed recreation sites, but may be allowed where compatible with site objectives.

Management Area 25:

- MA25-11A: Specific allotments, and portions of allotments that will be intensively managed for transitory range shall be identified.
- MA25-11B: Bring fair and poor condition suitable non-transitory rangelands to good condition.
- MA25-11C: Maintain improvements on suitable rangelands.
- MA25-11D: With improvements, meet "C" or "D" level management on suitable non-transitory rangelands where economically desirable.
- MA25-11E: Transitory range structural and nonstructural improvements and grazing systems shall be designed subject to silvicultural, wildlife, and other resource objectives.

Management Area 26:

- MA26-11A: Livestock grazing shall be allowed as long as wildlife habitat values are maintained or are increased.
- MA26-11B: Eighty-five percent of the annual available browse on winter range shall be for wildlife and 15 percent for domestic livestock.

The goal of each MA is described below:
Management Area 5: Provide opportunities for recreation and viewing scenery in a roaded natural setting with a visual quality objective of retention or partial retention.
Management Area 14: Provide a diversity of wildlife habitat, including deer winter range, while growing and producing merchantable wood fiber.
Management Area 17: Provide a variety of developed recreation opportunities in a roaded setting.
Management Area 25: Intensively manage the timber and range resources using both even-aged and uneven-aged silvicultural practices. Manage to achieve a high present net value and a high level of timber and range outputs while protecting the basic productivity of the land and providing for the production of wildlife, recreation opportunities, and other resources.
Management Area 26: Manage deer winter range and fawning habitats to provide conditions that can sustain optimal numbers of deer indefinitely, without degrading habitat characteristics such as forage, cover, and soil.

The Northwest Forest Plan (USDA and USDI 1994, 1995, 2007)contains the following three Standards and Guidelines for grazing management in riparian areas (Page C-33):

- **GM-1**: Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy Objectives. If adjusting practices is not effective, eliminate grazing.
- **GM-2:** Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.
- **GM-3**: Limit livestock trailing, bedding, watering, loading and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

The ARCS standards and guidelines (2008 refinement to the Northwest Forest Plan Standards and Guidelines above) for grazing management are:

Standard GM-1. New livestock handling, management or watering facilities shall be located outside of RMAs (Riparian Management Areas), except for those that inherently must be located in an RMA and those needed for resource protection.

Guideline GM-2. Within green-line vegetation area adjacent to all watercourses:

- do not exceed 20% streambank alteration;
- do not exceed 40% utilization of mean annual vegetative production on woody vegetation;
- maintain at least 4-6 inches (grass/grasslikes) or do not exceed 40% utilization of mean annual vegetative production on herbaceous vegetation

Guideline GM-3. During allotment management planning consider removal of existing livestock handling or management facilities from RMAs.

Guideline GM-4. Livestock trailing, bedding, loading, and other handling activities should be avoided in RMAs.

Guideline GM-5. Generally avoid trampling of Federally listed threatened or endangered fish redds by livestock.

Federal Law

The Congressional Rescission Act (Public Law 104-19, Section 504, U.S. Congress 1995) requires the Forest Service to identify all allotments on which a National Environment Policy Act (NEPA) analysis is needed and to prepare and adhere to a schedule for conducting an assessment of grazing actions under NEPA. The Forest Service established a 15-year schedule for completion of this work. The Allotment Management Plans (AMP) for the Lookout Mountain grazing allotment, which is located within the project planning area, has been updated to reflect current management direction and to address resource concerns on the allotment.

Watershed Analysis

Libby Watershed Analysis

Manage livestock grazing to meet Aquatic Conservation Strategy.

No recommendations were made to resolve road access problems for grazing allotment management.

Middle Methow Watershed Analysis

Utilize grazing plans, systems and rangeland improvements to enhance livestock operation feasibility and assist in achieving desired livestock distribution. This includes but is not limited to development of dispersed and/or upland watering sources for grazing livestock, placement of fences to form manageable pasture units, riding or herding routes, and utilizing Deferred or Rest grazing systems.
No recommendations were made to resolve road access problems for grazing allotment management.

Affected Environmentand Environmental Consequences

Resource Indicators and Measures

Figure 1: Resource Indicators and Measures for Assessing Effects

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: P/N, or key issue?	Source (LRMP S/G; law or policy, BMPs, etc.)?
Forage Availability	Understory Forage Production	Acres of forest canopy opened, improved cattle distribution Acres of soil disturbance	Key issue: Proposed thinning treatments will effect cattle grazing	LRMP
Meeting Riparian Management Objectives	Changes in openings or routes providing cattle access to riparian areas	Miles of road changes that limit access to riparian areas Acres of commercial harvest within or adjacent to riparian reserves	Key issue: Proposed thinning treatments will effect cattle grazing	LRMP S/G, ARCS S/G, Lookout Mt. AMP, Libby and Middle Methow W.A.
Reduced Range Management Access	Reduced Cattle Access to Transitory Range	Miles of access lost	Key Issue: Proposed transportation changes will negatively affect range management access	LRMP

	Miles of open roads within the grazing allotment	Miles of access lost	Key Issue: Proposed transportation changes will negatively affect range management access	LRMP

Methodology and Impact Level Definitions

Resource Indicator: Understory Forage Production

This analysis will consider the impacts of thinning treatments on understory forage production.Acres of forest canopy opened and acres of soil disturbance will be compared to existing conditions as described in the Affected Environment section. Thinning treatments would open the canopy and create a long term increase in forage production and soil disturbance caused by the thinning and soil treatment activities would create a short term reduction in forage.

Resource Indicator: Change in openings or routes providing cattle access to riparian areas

This analysis will consider the effects of proposed forest restoration activities on cattle access to riparian areas. Road system changes that would remove portions of road from riparian reserves would reduce access to the affected stream segments. The combination of opening the dense forest canopy and decommissioning roads leading to the riparian areas would change livestock access.Miles of road changes that reduce access to riparian areasand acres of proposed harvest within and adjacent to the riparian reserves will be compared to existing conditions.

Resource Indicator: Miles of accessible roads within grazing allotment (cattle access to Transitory Range).

The effects of the proposed transportation changes on cattle access to foraging areas within transitory range will be analyzed. The proposed decommissioning of roads may limit cattle travel and decrease proper grazing distribution. Miles of road proposed for decommissioning will be compared to the existing condition as described in the Affected Environment section.

Resource Indicator: Miles of open roads within the grazing allotment (range management access)

The effects of the proposed transportation changes to range management access on open roads will be analyzed. The primary concern would be directed at those roads proposed for conversion to ML1 (closed) or decommissioned, where range management access would be

inhibited or prohibited, relative to current conditions. Miles of road changes that reducerange management accesswill be compared to existing conditions in the Affected Environment section.

Open roads with a ML2 or greater meet the minimum vehicular range management access needs within the MRP Analysis Area. Typically ML3 roads would be needed for large semi-trucks with trailers used to haul livestock. However, some ML2 roads would provide this access. ML1 (closed) roads can meet the minimum access needs for some range management activities (i.e., improvement maintenance and livestock management) but access is limited to ATV, OHV, horse, or foot travel. Often, access is very limited on ML1 roads due to impassible barricades, washouts, and debris; the access becomes prohibitive without costly clearing of down trees and other debris; even to provide ATV access.

Impact Level Definitions

Impact Analysis Definitions for Forage Availability - Understory Forage Production

Type of Impact

- Adverse: Soil disturbance would reduce forage production.
- Beneficial: The opening of the forest canopy would increase forage production.

Duration of Impact

- Short-term: Immediately after soil disturbance.
- Long-term: Up to approximately 20 years.

Intensity of Impact

- None: No impacts
- Negligible: Soil impacts would only affect the foliage with no impacts to the roots.The forest canopy would not be opened enough for any measurable effect to forage production.
- Minor:Some soil impacts causing damage to both the foliage and roots but no plant mortality is expected. The opening of the forest canopy would be apparent with a measurable increase in forage production but with no noticeable benefit to cattle distribution.
- Moderate: Soil impacts cause some plant mortality with damage to both foliage and roots. The opening of the forest canopy would increase forage production enough to improve cattle distribution.
- Major: Soil impacts would cause irreversible damage the roots of the plant causing mortality. The opening of the forest canopy opening would increase cattle distribution as much as possible.

Impact Analysis Definitions for Meeting Riparian Management Objectives

Type of Impact

- Adverse: Thinning treatments would increase access to riparian areas.
- Beneficial: Specific to transportation changes; a decrease in access to riparian areas.

Duration of Impact

- Short-term: Thinning treatments – up to approximately 20 years.
- Long-term: Road changes - permanently

Intensity of Impact

- None: No impacts
- Negligible: A change in riparian access that would be so small that it would not be of any measurable consequence.
- Minor:A change in riparian access that would be small and localized and with no increased risk of not meeting riparian management objectives.
- Moderate: A change in riparian access that would be measurable and less localized.
- Major: A noticeable change in riparian access that would be measurable with an increased risk of not meeting riparian management objectives.

Impact Analysis Definitions for reduced range management access

Type of Impact

- Adverse: Transportation changes would reduce range management access.
- Beneficial: No benefit.

Duration of Impact

- Short-term: No short term impact.
- Long-term: A few decades to permanent changes in range management access.

Intensity of Impact

- None: No impacts
- Negligible: A change in range management access that would be so small that it would not be of any measurable consequence.
- Minor:A change in range management access that would be small but with some reduction in cattle distribution and management efficiency.
- Moderate: A change in range management access that would have a noticeable reduction in cattle distribution and range management efficiency.
- Major: A change in range management access that would severely impact management of the grazing allotment.

Affected Environment

Resource Indicator: Forage Availability – Understory Forage Production

Much of the lands within the project area are forested and do not provide a substantial amount of forage for livestock. The overstory composition of many of the forst stands have produced a dense canopy with low understory vegetation production. The majority of forage is in open conifer stands, old clear cuts, south facing slopes, meadows, and areas along roads. The primary forage type within the allotment is transitory range (a temporary increase in available forage due to past timber harvest). Much of the rangeland within the allotment is dominated by pinegrass under a conifer overstory. Most of the timbered areas support shrubs and grasses for forage in varying quantities depending on canopy closure.

Livestock use levels on understory forage

Allotment inspections, resource condition assessments, and mid and end of season monitoring are conducted on the allotment included in the project area each year.

The Lookout Mountain allotments has many designated monitoring areas (DMAs) across the allotments for monitoring forage utilization. Forage (grass) utilization standards are 45 percent in upland understory environments (pinegrass/Idaho fescue) and 55 percent in upland grasslands (bluebunch wheatgrass). Upland forage within the project area is meeting Forest Plan(USDA & USDI 1994,1995, 2007) (USDA FS 1989) utilization standardswith the exception of a few localized high use areas that may exceed 60 percent utilization.All DMAs within the project area have been meeting allowable usestandards (allowable level of forage use) over the past 10 years with few exceptions.

Grazing allotment within the project area

A large portion of the Lookout Mountain grazing allotment is located within the Analysis Area. The permitted use on the allotment is currently meeting Forest Plan standards (USDA & USDI 1994,1995, 2007) (USDA FS 1989) and is in balance with the current level of road access and forage availability. The permitted use in the allotment is displayed in *Figure 2: Permitted Cattle Use in the MRP Analysis Area.*

Figure 2: Permitted Cattle Use in the Analysis Area

Size (acres)	**Permitted use**				***Grazing System**
	Number (cow/calf pair)	**Season of Use**	**Head Months**	**AUMs**	
45,394	230	5/16-9/30	1127	1488	DRR

*Deferred/Rest Rotation (DRR)

The Lookout Mountain allotment is the only allotment within the project boundary. It is currently managed under the direction of the 2013 Allotment Management Plan (AMP). This AMP implements the decision from the Libby, Little Bridge, Newby, and Poorman Allotment Environmental Assessment (LLBNP EA). The allotment consists of 45,394 acres and is located in the Buttermilk Creek, Newby Creek, Poorman Creek, Libby Creek, Alder Creek, and Twisp River drainages. The permit allows 230 cow/calf (c/c) pair to graze from May 16 through September 30 every year for a total of 1,488 Animal Unit Months (AUMs – the amount of forage required by one mature cow [1,000 Ib.] or its equivalent for one month). Nine of the fourteen pastures in the Lookout Mountain allotment fall within project area. Five pastures are in the Libby Creek drainage: Mission/Ben, Chicamun, Hornet, Elderberry, and Smith; four pastures are in the Buttermilk drainage: Shady, Buttermilk, and Scaffold; and the West pasture falls within the Twisp River drainage. The current grazing system is deferred rotation (withholding livestock to allow the forage to reach a certain stage of growth), except for the Chicamun, Hornet, and Smith pastures which are under a rest rotation (allowing rest for one year).

Roadswithin the MRP were constructed in conjunction with intensive logging activity that started in the 1950s and were completed in the 1960s through the 1990s in conjunction with commercial timber harvest. The current grazing allotment boundaries were established in response to the development of these roads and the transitory range created by the opening of

the canopy primarily through timber management which increased understory vegetation and subsequent forage for livestock (transitory range).

Resource Indicator: Change in openings or routes providing cattle access to riparian areas

There are riparian areas on the Lookout Mountain allotment within the project area where past management (prior to 2010) may have adversely affected ESA listed fish. There are several areas that did not meet Aquatic Conservation Strategy Objectives (ACSO). The current Allotment Management Plan (AMP) is designed to improve resource conditions in these areas to eliminated impacts that retard or prevent attainment of the objectives. These riparian areas are Libby Creek, Buttermilk Creek, and East Fork Buttermilk Creek. It is a requirement of the AMP to meet allowable use in these riparian areas.

Within the project area, the Lookout Mountain allotments has designated monitoring areas (DMAs) for monitoring streambank alteration and Riparian shrub use and use on riparian grasses/sedges. The DMAs are chosen to be representative of a larger stream or meadow area or the most representative upland areas. The allowable use standard for livestock caused streambank alteration is not to exceed 20% current year alteration by livestock and limit allowable use on riparian shrubs to 40% utilization and riparian grasses to 45% utilization. All DMAs within the project area have been meeting allowable use standards over the past 10 years with few exceptions.

During summer, livestock tend to be attracted to riparian zones due to water availability; higher concentrations of nutritious, palatable forage; and, if trees or shrubs are part of the system, preferable thermal conditions (Leonard et al 1997). Cattle generally prefer grasses and forbs to woody vegetation, at least when the herbaceous vegetation is green. Some degree of moderate use of palatable herbs (primarily grasses and sedges) can occur within the riparian area without undesirable browsing of riparian shrubs and without streambank damage (Hall and Bryant 1995). In riparian areas, livestock generally do not browse woody plants if they have a sufficient supply of palatable grass (Leonard et al 1997). The opening of the canopy in thinning units adjacent to the riparian areas would increase understory forage production. As long as a sufficient level of palatable grass is available outside of the riparian area, as discussed further below, undesirable streambank damage and browsing of riparian shrubs is unlikely.

Many of the proposed thinning units are within pastures that are grazed in the early season (May-June). The forage type within these early season pastures is predominantly bluebunch wheatgrass on the open south facing slopes and pinegrass in conifer-dominated sites. In the early season the forage preference by cattle is for bluebunch wheatgrass over pinegrass. The cattle utilize the bunchgrass habitat while cool temperatures and moist soils keep the bunch grass green and palatable. The cattle will mostly be distributed in the upland bunchgrass habitat during the early season as the upland plants have similar or higher nutritional content than the riparian forage. Also there are more upland water sources and preferable thermal conditions for the cattle (Wyman et al 2006). Cattle would utilize the pinegrass transitory forage within the harvest units to a much lesser extent and the existing riparian shrub densities would be maintained, because the early season timing of livestock use would favor upland forage within most of the harvest units.

Resource Indicator: Miles of accessible roads within grazing allotment (cattle access to Transitory Range).

The primary forage type within the Lookout Mountain allotment is transitory range, which are areas of temporary forage resulting from openings created by past timber harvest, prescribed fire, and wildfire. Roads serve as the dominant livestock travel paths to and from transitory range. A reduction in the road network will reduce or restrict access to transitory range.

All the roads within the project area fall exclusively within the Lookout Mountain grazing allotment. Roads are extremely important to the movement of cattle through the relatively steep rangeland within the project area. Currently, roads offer access to transitory range whereby routine and efficient travel paths have been established to guide livestock. Figure 3displays the miles of roads that currently occur within the Lookout Mountain allotment. Much of the rangeland within the allotment is dominated by pinegrass under a conifer overstory. Miles of road changes that reduce access to transitory rangewill be compared to existing conditions.

Figure 3: Current Road Miles by Management Level in the Lookout Mountain Grazing Allotment

1 - BASIC CUSTODIAL CARE (CLOSED)	77.25
2 - HIGH CLEARANCE VEHICLES	28.24
3 - SUITABLE FOR PASSENGER CARS	25.02
4 - MODERATE DEGREE OF USER COMFORT	3.41
Grand Total	**133.92**

Resource Indicator: Miles of open roads within the grazing allotment (range management access)

Currently there are a total of 56.67 miles of open roads within the Lookout Mountain allotment. These roads are providing needed access by both the Forest Service and permittee to administer and manage the allotment.The current level of access is sufficient to effectively and efficiently maintain structural improvements, place salt, move cattle on and off the allotment via truck or stock trailer, and check on cattle distribution. It is common that permittees will look for cattle using motorized vehicles, then ride to gather cattle once found.

Figure 4**:** Current Open Road Miles by Management Level in the Lookout Mountain Grazing Allotment

2 - HIGH CLEARANCE VEHICLES	28.24
3 - SUITABLE FOR PASSENGER CARS	25.02
4 - MODERATE DEGREE OF USER COMFORT	3.41
Grand Total	**56.67**

Environmental Consequences

Proposed Actions Dismissed from Further Consideration

The following proposed actions will not be considered further in this analysis because they would have no measurable effect on Range Resources: rock armoring; replacing undersized culverts or installing fish culverts; beaver habitat or coarse woody debris enhancement; or creating hardened fords.

Alternative 1 – No Action

Under the No Action alternative, the Mission Restoration Project would not be implemented. The landscape of the project would be left in its current condition.

Resource Indicator: *Forage Availability – Understory Forage Production*

Forest stand canopy closure would continueand the availability of understory forage would decrease slowly. The no action could result in limiting livestock use patterns and distribution. Livestock use within the project area would be more concentrated as the transitory range forage production becomes more limited and would need to be adjusted through Annual Operating Instructions if Forest Plan allowable use standards were exceeded. A minor, long-term, adverse impact is expected.

Resource Indicator:*Change in openings or routes providing cattle access to riparian areas*

As tree stand density increasesand as snags fall and debris accumulates, there would be fewer openings and more limited access routes to riparian areas. Fuel loading would continue to increase and fire intensity would be expected to be high in the projects area. In the event of a wildfire, cattle access to the riparian area could increase, and post-fire vegetation could change to a more palatable forage type that would attract cattle, resulting in an increase in damage to streambanks from trampling and hedging of regeneratedriparian shrub species. A minor to moderate, long-term, adverse impact is expected.

Resource Indicator:*Miles of accessible roads within grazing allotment (cattle access to Transitory Range) and miles of open roads within the grazing allotment (range management access)*

Range management road access levels would remain the same as they are currently unless modified by future, project level NEPA analysis. The transportation system would continue to provide for relatively efficient administration and permittee livestock management. Livestock would continue to be able to access remote forage by using roads that are relatively free of obstacles. No beneficial or adverse impact is expected.

Alternative 2(Proposed Action) and Alternative 3

With the exception of the transportation changes, the proposed project activities are identical between Alternatives 2 and 3 and the effects for both alternatives will be described together. The transportation changes will be discussed separately under Alternative 3.

Project Design Criteria

Figure 5: Design Criteria

Number	Design Feature	Why Necessary	Efficacy	Consequence of Not Applying
	Existing structural Range improvements (fences, gates, water troughs) will be protected under the sale contract as well as protected during prescribed fire and ladder fuel reduction activities. No trees will be cut that are incorporated into the fence line. Known fences that are cut in order to facilitate logging operations will be repaired to preexisting condition by the purchaser. All fences and water troughs within the sale area boundary will be identified on the Sale Area/Contract Map. Extra care should be taken to locate improvements during treatment activities occurring in the winter due to limited visibility because of the accumulation of snow.	To protect range structural improvements while implementing thinning treatments	Moderate	Existing structural range improvements may be damaged
	Existing improvements will have a 10' area surrounding the improvement cleared of slash produced by harvest or post-harvest activities. All improvements will be identified on the Timber Sale Map, in fuels treatment contracts, and in the Burn Plan.	To protect range structural improvements while implementing fuels treatments	Moderate	Existing structural range improvements may be damaged
	It will be a contract requirement that specific gates will remain closed during work and non-work hours if and when project activities occur within a pasture when authorized cattle use is occurring. The range specialist will work with the TSA to identify when there is a need to keep specific gates closed.	To maintain cattle in authorized grazing areas	Moderate	Cattle may not be maintained within authorized areas and stray cattle may contribute to resource damage
	Road segments identified to be decommissioned that are necessary for cattle trailing or designated as a stock driveways will be decommissioned in such a way that does not preclude travel by cattle and horses, but access by ATV's/UTV's will be prevented. The Range Permit will be modified to assign require maintenance of these pathways to the permittee.	To maintain cattle access	Moderate	Movement and gathering of cattle by Range Permittees will be much more difficult. A new trail/route would need to be built outside of the road prism creating additional soil disturbance

	Forest Service manual 7731 Road Operation describes that roads can be closed to the public yet used for administrative uses. For this Transportation analysis such roads will be closed in such a way to accommodate ATV/UTV access for maintenance of stock tanks or other legitimate reasons and be closed in such a way that does not preclude travel by cows and horses. An approximate 5-foot wide portion of the original road may be preserved to provide this access. ATV/UTV access would be authorized for administrative use only on roads identified in Appendix B – Proposed Transportation Plan of the Engineering Specialist Report. Road closure methods described in the preceding section may be used. Such roads serve as a practical approach to reduce environmental impacts while maintaining minimal, yet required administrative use by either USFS personnel, contractors or permittees while in the performance of required management responsibilities.	To ensure needed ATV/UTV access	High	Permittees and Forest Service would lose motorized access greatly reducing range management efficiency

Figure6: Resource Indicators and Measures for Alternative 2and 3

Resource Element	Resource Indicator	Measure (Quantify if possible)	Used to address: P/N, or key issue?	Source (LRMP S/G; law or policy, BMPs, etc.)?
Forage Availability	Understory Forage Production	Acres of forest canopy opened	Y	LRMP
		Acres of soil disturbance		
Meeting Riparian Management Objectives	Change in openings or routes providing cattle access to riparian areas	Miles of road changes that limit access to riparian areas	N	LRMP S/G, ARCS S/G, Lookout Mt. AMP, Libby and Middle Methow W.A.
		Acres of commercial harvest within or adjacent to RMAs		
Reduced Range Management Access	Reduced Cattle Access to Transitory Range	Miles of access lost	N	LRMP
	Miles of open roads within the grazing allotment	Miles of access lost	N	LRMP

Resource Indicator: Forage Availability – Understory Forage Production

It is well-documented that thinning and/or removal of the forest component in dry forest ecosystems results in the stimulation of the associated understory vegetation (Riegel et al.1995, Naumburg and DeWald 1999, McConnell and Smith 1970). In general, the research indicates that productivity of understory vegetation is inversely related to tree density and directly proportional to the amount of solar radiation that reaches the understory vegetation.

Thinningtreatments would open 9782 acres ofthe conifer overstory and dense patches of young conifers in the understory within the Lookout Mountain allotment. This would allow increased light levels to the understory as well as more soil resources available and reduced competition to understory species. Thinning and underburning activities usually reduce forage production only during implementation. Shortly after these activities (within a season), the understory species increase, producing transitory range for livestock as described and provided for in the LRMP. A long-term, moderate, beneficial impact is expected.

Acres of Overstory and Understory Thinning Relative to the Grazing Area

Only the pastures affected by the proposed action are analyzed and listed in Figure 7. Relative to the total grazing area, 36%is within thinning treatment units. The Mission and Shady pastures have the bulk of the thinning treatments (50%).

Figure 7: Acres of Overstory and Understory Thinning Within the Grazing Area

Pasture Units	Noncommercial Thin				Commercial Thin					Total	Total Pasture Acres
	Plant-ation Thin	LFR Thin out-side CTU	Post & Pole Thin	Conifer Girdling for Aspen	Aspen Thin	Dry Forest Restoration – Dwarf Mistletoe Thin	Dry Forest Restor-ation Thin	Moist Forest Thin	Variable Retention Regen Thin		
Ben	103	69				1	66			239	1637
Buttermilk	243	727	40		15		45	5		1075	3003
Chicamun							224			224	3013
Elderberry		198					252			450	963
Hornet	305	666			12		55	28		1066	3613
Mission	613	1574		40	55	145	289		80	2796	6153
Scaffold	56	599								655	
Shady	362	1167		36	129	138	217	42		2091	4951
Smith		1104	5				136			1245	4067
West		101								101	
Total	1703	6025	45	76	210	284	1284	75	80	9782	27400

CTU: Commercial Thin Units

There are a total of 1933 acres of commercial thinning units within the affected grazing allotment. The area of commercial harvest is small relative to the grazing area (7%). (see Figure 7) There would be 29% of the total affected pasture area within non-commercial thinning units and 36% within all thinning units. With the affected rangeland having 36% percent of the area

within the thinning units, it is expected that there will be a long-term, moderate, beneficial impact to understory forage production. The short-term effect on the current available forage would be a slight reduction relative to the total available forage and the long-term effect of increase transitory forage would be expected to increase proportionally to the amount of acres treated that open the canopy. It is well-documented that thinning and/or removal of the forest component in dry forest ecosystems results in the stimulation of the associated understory component (Riegel et al.1995, Naumburg and DeWald 1999, McConnell and Smith 1970). In general, the research indicates that productivity of understory vegetation is inversely related to tree density and directly proportional to the amount of solar radiation that reaches the understory vegetation. The same research indicates that increased productivity is positively correlated with larger trees and wider spacing. The effect of increased plant productivity is an increase in forage and browse that is available for grazing by permitted livestock. This transitory range would increase the amount of available forage within the grazing allotment and would improve livestock distribution. Under current stocking rates, the additional forage would distribute livestock use patterns more evenly reducing overall utilization levels across the grazing allotment. Additionally, with improved livestock distribution, it is expected that grazing would have anegligible effect on the rate and pattern of the understory vegetation response to a more open canopy and the basic productivity of the land would be protected for wildlife and other resources.Neither the current Lookout Mountain AMP nor the Mission Restoration EA would provide for an increase in livestock numbers. There will not be an increase in AUMs (Animal Unit Months) permitted to graze

A total of 210 acres of commercial thinning and 76 acres of noncommercial thinning are proposed to promote the restoration of aspen stands. The recent grazing Allotment Management Plan revision EA (LLBNP EA 2011) analyzed the effects of cattle grazing on aspen which included all of the Mission planning area. The analysis found that most, if not all, of the aspen stands are utilized by cattle for grazing and loafing, but the present grazing system [at that time] appears to be conducive to allowing aspen stands to regenerate through sucker sprouting. The stands appear to be healthy and are limited more by conifer shading and disease than by ungulate browsing. Hadfield and Magelssen (2004) found that aspen stands on the Okanogan and Wenatchee National Forests were commonly browsed by cattle and deer, but not severe enough to prevent aspen sprouts from growing into larger stem sizes. Some of the stands they reviewed were in the Mission project area. Cattle are using these stands but do not appear to be detrimentally browsing the suckers to the point of preventing stand development. (Hadfield and Magelssen 2004, LLBNP EA 2011) As discussed above, thinning treatments would increase the productivity and distribution of understory vegetation. Grazing use levels across the project area are currently less than when the 2011 grazing analysis was completed and are meeting allowable use standards. It is expected that the relatively large scale thinning treatments would increase cattle distribution and further reduce cattle impacts to aspen stands.

Effects of Underburning on Understory Forage Production

There would be 7363 acres of underburing.Some of the areas within the Underburning units are not grazed due to slope and distance from water. Typically range greater than 30% slope, and more than ½ mile from water is not classified as capable range. As a result, the burns would have little effect on livestock distribution patterns within these areas. Within capable range, prescribed burning has long-term beneficial effects. Typically, understory species associated with dry forest plant communities are either tolerant of or enhanced by low and moderate intensity fire (Agee 1993). Prescribed fire would have a positive effect on the overall vigor of the

forage and wouldhelp maintain a more open structure in most of the timber stands within the analysis area, improving the potential to increase forage production in the understory. Where there is cattle accessibility, the improved forage would help draw cattle away from riparian areas. A minor, long-term, beneficial impact is expected.

The Effect of Soil Disturbance on Understory Forage Production

Winter operations are required in some units to minimize soil impacts unless the purchaser can present a plan of ~~for~~ no more than 2% detrimental soil conditions per unit. Ground based winterharvest on frozen soils has shown to result in less detrimental soil disturbance as compared to summer harvest (Reeves et al. 2011). There would be virtually no soil disturbance that would be detrimental to understory forage under winter logging and a short-term, negligible to no adverse impact is expected.

A total of 455 acres of soil treatments are proposed within the grazing units. The bulk of these treatments are in the bottom of Ben, Chicamun, and Elderberry canyons and in the bottom of Hornet Draw. These units are associated with the flat canyon bottoms where cattle commonly loaf. Forage production is generally low within the treatment units where thevegetation is conifer and shrub dominated and the forage tends to be patchyand in relatively small pockets. The bulk of the primary forage is on the toe slopes of the canyons above the valley bottoms. It is not expected that the treatments would result in a measureable short term reduction in forage production, however, where overstory thinning and soil treatments overlap, it is expected that there would be a long term increase in understory forage as the vegetation responds to improved soil structure and light levels. A negligible, short-term, adverse impact is expected.

Figure 8:Acres of Soil Treatments by Pasture Units

Pasture Units	**Soil Treatment Acres**
BEN	115.96
CHICAMUN	104.45
ELDERBERRY	92.15
HORNET	82.75
MISSION	15.31
SMITH	44.80
Total	455.42

Resource Indicator: Change in openings or routes providing cattle access to riparian areas

Riparian Reserves

When riparian areas lie within overstocked forest stands with dense canopies, cattle access may be limited by the physical barrier that the vegetation creates or cattle simply are not attracted the riparian area as it may offer little or no forage opportunities. Cattle will avoid these areas in favor of open forest stands, south facing slopes, meadows, and areas along roads. Opening forest stands within riparian reserves may increase cattle access to the riparian areas and may limit meeting Riparian Management Objectives. Conversely, opening forest stands in

the uplands outside of riparian reserves would increase available forage and would likely draw cattle away from the riparian area. Additionally, the roads leading to riparian areas can serve as efficient cattle travel paths and facilitate livestock access. Road system changes that would remove portions of road from riparian reserves would reduce access to the affected stream segments. The combination of opening the dense forest canopy and decommissioning roads leading to the riparian areas would change livestock access. A minor, short-term, adverse impact is expected.

There is currently a need to reduce the level of livestock use in some riparian areas within the project area. Approximately 78 acres of proposed Commercial harvest units lie within the outer edge of Riparian Reserves. In order to meet ACS Objectives, no-harvest buffers of 50 to 100 feet would be established along intermittent and fish bearing streams. Also about 60 percent of the harvest in Riparian Reserves would be done in the winter and occur over frozen ground. All harvest activities within Riparian Reserves would be done with the objective of attaining riparian management objectives and ensure that Forest Plan and ACS objectives are met.By attaining these objectives and meeting these standards and guidelines, it is expected that there would be a short-term, negligible, adverse impact.

Additionally, some of the riparian areas within the project area are intermittent headwater streams. Livestock would not be attracted to these areas for water, because these streams typically do not have surface water during the summer grazing season. Most of the perennial streams have dense populations of riparian shrubs that stabilize the banks and limit livestock access. Some of the perennial streams like Buttermilk and upper Libby creeks are high gradient, cascading, and boulder with very limited cattle access. Project design details and mitigation measures would help prevent additional livestock impacts to riparian areas.

The soil disturbed by project activities in harvest units adjacent to the perennial streams would be seeded with grasses which would help draw cattle away from perennial riparian areas. All perennial streams would have a no-cut buffer zonefrom 50 to 100 feet or more. The accumulation of down, dead material in the buffer zone would impede cattle access. Large accumulations of down dead material have led to decreased access to riparian areas in other streams on Methow Valley Ranger District and continue to be a benefit in protecting the riparian habitat.

Opening the forest stands with the proposed commercial thinning treatments would increase available forage outside of riparian areas. The number of cattle that access riparian areas may decrease, because grazing distribution patterns would improve in the uplands. Even though the more open stands could allow easier access to riparian areas, no additional use of riparian areas is expected because cattle distribution would be improved and direct access to streams would be restricted by riparian vegetation along streams.

Water developments in the upland areas that lack water are often a key factor in reducing livestock concentrations in riparian areas (Wyman et al 2006). The permittee would continue to maintain the upland water developments. Range management practices such as riding; proper salting, and maintaining allotment fences would also reduce the potential for additional livestock impacts to riparian areas.

<u>Miles of road changes that limit or increase access to riparian areas</u>

During the hot summer months, cattle prefer the quality, diversity, and succulence of the vegetation found in riparian zones. Slopes less than 35% are preferred by cattle andwhen forage rich riparian zones are available at the bottom of narrow canyons, they are attractive to cattle and concentrate their activities when upland forage becomes rank or dry (Wyman et all 2006, Bryant 1982). There are a total of 4.41 miles of road that currently provides cattle trailing access to riparian areas that would be decommissioned under alternative 2 and 3. Both action alternatives would have a similar effect in limiting cattle with the exception of the 4342-300 road in Alt. 3. In alternative 3 all three miles of the 4342-300 road (Chicamun Canyon road) would be decommissioned but only the last .63 mileswould be decommissioned in Alternative 2. Cattle currently concentrate travel on the ChicamunCanyon roadto avoid more difficult movement through the vegetated off-road areas along the stream and typically only travel to the stream in the most accessible areas. Under alternative 3, more cattle travel would shift off the altered Chicamun Canyon road surface and on to the more accessible areas between the road and the creek, which may be within the riparian area, resulting in an increase in cattle impacts.With the exception of the Chicamun Canyon road, alternatives 2 and 3 would have similar trailing access to the riparian areas. SeeFigure 9 below.

Figure 9: Roads Proposed for Decommissioning that would Reduce Riparian Cattle Access for Alterative 2 and 3

Road Number	**Riparian Area**	**Miles Affected**	
		Alternative 2	**Alternative 3**
4300050-0.85R-1	Hornet Draw Cr.	0.23	0.23
4300103	Libby Cr.	0.2	0.2
4300103-0.19-1	Libby Cr.	0.09	0.09
4300130	Ben Cr.	1.37	1.37
4300180	S.F. Libby Cr.	0.4	0.4
4300182	Tributary of Libby Cr.	0.62	0.62
4340719	S.F. Libby Cr.	0.15	0.15
4340719-0.10-1	S.F. Libby Cr.	0.05	0.05
4340742	N.F. Libby Cr.	0.43	0.43
4340782	N.F. Libby Cr.	0.24	0.24
4342300	Chicamun Canyon Cr.	0.63	3.0
	Total	**4.41**	**6.78**

Coarse Woody Debris Enhancement

The felling conifers into streams would not only help to restore fish habitat but an added benefit would be that the trees would help to limit cattle access to the stream; especially by restricting trailing up and down the stream. All of the streams proposed for CWD enhancement would benefit from less cattle access both as habitat protection and to reduce the potential of physical impact to fish.

Figure 10: Miles of Coarse Woody Debris within Pastures

Stream	**Pasture Unit**	**Miles of stream**
Buttermilk Cr.	Buttermilk	1.32
North Fork Libby Cr.	Mission	0.85
West Fork Buttermilk Cr.	Buttermilk	1.85
Libby Cr.	Mission	1.07
West Fork Buttermilk Cr.	Buttermilk	0.55

Black Pine Cr.	Shady	1.26
Black Pine Cr.	Buttermilk	0.20
	Total	7.1

Effects of Ladder Fuels Reduction (specific to riparian areas)

Ladder Fuels Reduction (LFR) would not increase livestock access to riparian areas. Aquatic resources design criteria would not permitLFR anywhere inside Riparian Reserves (10 ft. buffer for intermittent and 50 ft. buffer for perennial streams). This would prevent LFR treatments from getting close enough to stream channels to create new openings to the riparian areas for cattle access with no impacts expected.

Effects of Underburning

The proposed action would reduce the fuel loading adjacent to riparian areas and within some Riparian Reserves. Approximately 739 acres of proposed fuels treatments lie within Riparian Reserves. All treatments within Riparian Reserves must not prevent the attainment of Aquatic Conservations Strategy Objectives. The design criteria would be no active lighting within 25 feet of intermittent streams and 100 feet of perennial streams with a resource objective of maintaining 95% survival of over story trees, 66% of the understory, and 50% of the ground cover. If these objectives cannot be met, the area would be excluded. The effect of underburnng would be that most of the riparian obligate shrub vegetation would remain intact.

There would be no dozer fireline and hand fireline will not be constructed within Riparian Reserves except for the purpose of controlling backing fire and outside of approximately 100 feet of a stream where needed to keep the fire out of the inner gorge. The construction of fireline would create cattle access paths along riparian areas but with the implementation of the design criteria, a short term, negligible, adverse impact is expected. Treatment of forest stands adjacent to riparian vegetation would reduce the severity of effects from wildfire. Proposed vegetation treatments that provide for the greatest potential to reduce the severity of wildfires and consequently sustain the dense riparian shrub community would best maintain the current limited cattle access.

The timing of the burning relating to scheduled grazing rotations could require in the intensity, timing and duration of livestock use within the affected pastures. These adjustments would be incorporated into annual operating instructions to meet resource protection standards.

Alternative 3

Resource Indicator: Miles of accessible roads within grazing allotment (cattle access to Transitory Range).

Reduced Cattle Access to Transitory Range

The implementation of either of the two action alternatives would result in less cattle access to foraging areas and reduce grazing distribution throughout the grazing allotment. Of the 134 total miles of road within the grazing allotments, approximately 31 miles would be decommissioned under Alternative 2 and 54 miles would be decommissioned under Alternative 3. (This does not include Temporary roads that would be decommissioned)

After road decommissioning, access on roads that previously provided routes to foraging areas through rough, steep, or densely forested terrain may be limited to the extent of making that forage unavailable. Not all the roads proposed for decommissioning currently provide access to foraging areas. Those roads to be decommissioned that are currently used extensively by cattle would be designed to provide cattle access by leaving a trail-space along the edge of the decommissioned road. These project design criteria would be applied to 1.6 miles under both action alternatives, reducing impact to livestock grazing. Overall, there would be a 23% reduction in roads available for livestock access to transitory range for Alternative 2 and a 40%reduction for Alternative 3. A long-term, minor to moderate, adverse impact is expected for Alternative 2 and a long-term, moderate to major, adverse impact is expected for Alternative 3.

Figure 11.Specific Roads Proposed to Decommission with Stock Trail

Road Number	Total Road Length (mi.)	Alt 2 and 3 Stock trail Length (mi)	Current ML	Alt 2	Alt 3
4300070	.76	.69	ML 1	D – stock trail	D – stock trail
4300105	.33	.33	ML 1	D – stock trail	D – stock trail
4300152	.1	.1	ML1	D – stock trail	D – stock trail
4342100	2.31	.50	ML 1	D – stock trail	D – stock trail
	Total	1.6			

Refer to Figure 13: Alternative 2 and 3 Miles of Road by Grazing Allotment Affected by Maintenance Level Changes.

Resource Indicator: Miles of open roads within the grazing allotment (range management access)

The primary concern would be directed at those roads proposed for conversion to ML1 (closed) or decommissioned, where range management access would be inhibited or prohibited, relative to current conditions. Figure 13: Alternative 2 and 3 Miles of Road by Grazing Allotment Affected by Maintenance Level Changes depicts the miles of road within the grazing allotment for both alternatives where range access would be limited by closing or decommissioned roads. The District conferred with grazing allotment permittees to determine which roads are essential for continued range management. When such roads would be closed or decommissioned, design features would be incorporated to allow for continued access. Therefore, the current 57 miles of open road (ML 2-4) would be reduced to 52 miles for Alternative 2 and 35.4 miles for Alternative 3 (ML2-4 –4.86 and 21.58 miles)

Design criteria for decommissioned roads was previously described. For road closures, Forest Service manual 7731 Road Operation describes that roads can be closed to the public yet used for administrative uses as ML2 Administrative Use roads. Existing and proposed ML1 roads needing ATV/UTV access for maintenance of stock tanks or other legitimate reasons would be converted to a ML2 Administrative Use designation. A total of 13.15 miles of ML1 road would be designated as ML2 Administrative Use roads for alternative 2 and 4.75 miles for alternative 3. Only the roads with proposed changes in maintenance levels that restrict range access are displayed in the following table. With these design criteria, the effects of the proposed road closures and decommissioning on range management would be greatly reduced with the effects

of Alternative 3 having a much higher impact on reducing range management access than alternative 2. It is expected that Alternative 2 would have a minor to moderate, long-term, adverse impact and Alternative 3 would have a moderate, long-term, adverse impact. (Refer to Appendix XX for a list of these roads.)

Figure 12: ML1 that would be Designated as ML2 Administrative Use Roads for Alternative 2 and 3.

Road Number	Alt 2 Length (mi)	Alt 3 Length (mi)	Motorized access Needs
4300200	0.48	0.48	To maintain Black Pine Beaver Pond exclosure fence
4300215	0.59	0.59	To maintain Black Pine Beaver Pond exclosure fence
4300220	1.02		To maintain water development and division fence
4300550	1.27		To maintain water development
4300554	0.23	0.23	To maintain water development
4300556	0.80		To maintain water development
4300610	0.80	0.80	To maintain water development
4300615	0.44		To maintain water development
4300635	0.60		To proposed water development and admin access
4300645	1.30		To maintain division fence
4300645-1.17R-1	0.24	0.24	To maintain division fence
4300650	1.20	1.20	To maintain water development
4340715	1.20	1.20	Administrative access
4340785	0.57		To maintain water development and stock driveway access
4342300	2.39		Administrative access to Ben Canyon
Total	**13.15**	4.75	

Figure 13: Alternative 2 and 3 Miles Affected by Maintenance Level Changes

Proposed change in ML	Within Lookout Mountain Allotment	
	Alt 2	Alt 3
2 to 1 or ML2 Administrative Use	**5.81**	**15.44**
ML2 Administrative Use	*3.19*	*0*
Range Access Loss	2.62	15.44
2 to D	**2.24**	**6.14**
D miles with Stock Trail/Trail	*0*	*0*
Range Access Loss	2.24	6.14
1 to D	**28.74**	**47.46**
*D miles with Stock Trail/*Trail*	*1.96*	*1.62*

Proposed change in ML	Within Lookout Mountain Allotment	
Range Access Loss	*26.78*	*45.68*
1 to ML2 Administrative Use	9.95	4.74
Total Range Access Loss (2 to 1, 2 to D, 1 to D)	31.64	67.26
Open Road Range Access Lost (2 to 1, 2to D)	4.86	21.58
Total OHV Administrative Use (ML2)	13.15	4.74
Total OHV access (ML2)/Range closure designs (Stock Trail/Trail)	15.10	6.36

D = decommissioned roads
UA = unauthorized roads
OHV = Off Highway Vehicle
*Not a stock trail but cattle will have access.

There are roads where access is critical for fence and water development maintenance, livestock management, and administrative use. Figure 14 lists over 12 miles of roads that are proposed for decommissioning under alternative 3that are the most critical for allotment management and administration. The roughened surface of decommissioned roads greatly limits livestock trailing. Livestock would create new trails on the decommissioned road or create new off-road trails. Locating and gathering cattle would be more difficult. Administrative access and all management access would be limited to foot travel or limited horse travel which would greatly reduce the efficiency for livestock management and administration.

Figure 14: Roads Critical for Allotment Management and Administrationunder Alternative 3

Road Number	Miles
4300550	1.96
4300553	1.58
4300556	0.80
4300560	2.29
4300615	0.72
4300615	0.44
4300645	1.30
4340785	0.70
4342300	2.39
Total	**12.18**

Cumulative Effects Analysis

Spatial and Temporal Context for Effects Analysis

This cumulative effects analysis considers effects of past, present and reasonably foreseeable future actions within the analysis area. The geographic boundary for this cumulative effects analysis is the entire analysis area boundary and the temporal boundary is from about 50 years in the past when the development of roads for timber harvest created transitory range and easy range management access to 10 years in the future, the period of time needed for grazing management to adjust to the proposed transportation changes.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Past Actions: Roads were constructed in conjunction with intensive logging activity that started in the 1950s and ended in the 1990s. The current grazing allotment boundaries were established in response to the development of these roads and the transitory range created by timber harvest and opening of the canopy. Past prescribed burning and fire suppression activities have slightly increased livestock access to foraging areas with the creation of hand and dozer firelines.

Present Actions:

The implementation of the 2013Lookout Mountain Allotment Management Plan (AMP) include actions such as new fence construction and more management flexibility built into the grazing strategies with requirements to meet riparian management objectives.Livestock numbers will remain consistent with the current AMP.

There would be weed control along roads and in some off road areas under the existing Integrated Weed Management decisions. See the Invasive Plant section for details.

Active fire suppression will continue in the project area because of its proximity to private lands and associated developments. Suppression activities have contributed to changing the natural fire cycle from frequent, low-intensity fires that kept the forest structure more open to much less frequent fires that have allowed trees to become more dense, which has reduced the quality and availability of transitory range.

Reasonably Foreseeable Future Actions:

The Okanogan-Wenatchee National Forest Access and Travel Management Planwould designate roads, trails and areas open for motorized vehicle use and close the remainder of the National Forest to motorized use.

Livestock grazing would continue. Range management techniques—such as riding, adjusting intensity, proper salting, and maintaining water developments and fences—would continue to help meet riparian objectives and to obtain a more uniform distribution of use on the allotments.

The implementation of the *Okanogan-Wenatchee National Forest Forestwide Site-Specific Invasive Species Treatment EIS* would increase the number of weed treatment options available and increase the area of infested lands that may be treated within the project area. Early detection, rapid response to newly discovered infestations would increase treatment effectiveness and reduce the potential for spread of new populations. This future action would help maintain a sustained yield of desirable forage plants and would reduce the spread of invasive plants from livestock grazing.

Figure15: Resource Indicators and Measures for Cumulative Effects Alternative 2

Resource Element	Resource Indicator	Measure	Alternative 2 (Units)	Present, and Future Actions (Units)	Cumulative Impacts (Units)
Forage Availability	Increase in Understory Forage Production	Acres of forest canopy opened	9782 acres	0	9782
		Acres of soil disturbance	98 acres (5% of 1933)	0	98
Meeting Riparian Management Objectives	Changes in openings or routes providing cattle access to riparian areas	Miles of road changes that limit access to riparian areas	4.41	0	4.41
		Acres of commercial harvest within or adjacent to Riparian Reserves	78	0	78
Reduced Range Management Access	Reduced Cattle Access to Transitory Range	Miles of access lost	31	0	31
	Miles of open roads within the grazing allotment	Miles of access lost	4.86	0	4.86

Figure 16: Resource Indicators and Measures for Cumulative Effects Alternative 3

Resource Element	Resource Indicator	Measure	Alternative 3 (Units)	Present, and Future Actions (Units)	Cumulative Impacts (Units)
Forage Availability	Increase in Understory Forage Production	Acres of forest canopy opened	9782 acres	0	9782
		Acres of soil disturbance	98 acres (5% of 1933)	0	98
Meeting Riparian Management Objectives	Changes in openings or routes providing cattle access to riparian areas	Miles of road changes that limit access to riparian areas	6.78	0	6.78
		Acres of proposed harvest within or adjacent to Riparian Reserves	78	0	78
Reduced Range Management	Reduced Cattle Access to Transitory Range	Miles of access lost	54	0	54

Resource Element	Resource Indicator	Measure	Alternative 3 (Units)	Present, and Future Actions (Units)	Cumulative Impacts (Units)
Access	Miles of open roads within the grazing allotment	Miles of access lost	67	0	67

Resource Indicator: Forage Availability - Understory Forage Production

Figure 17: Increase in Understory Forage Production Cumulative Effects

Project	Overlap In Time Space		Measurable Cumulative Effect?	Extent, Detectable?
Recreation Activities	Yes	Yes	No	Not detectable
The implementation of the 2013 Allotment Management Plan (AMP)	Yes	Yes	Yes	The ongoing implementationof the AMP would have a measureable effect in sustaining the understory vegetation.
Noxious Weed Control under the Okanogan-Wenatchee National Forest Invasive Plant Treatment EIS	Yes	Yes	Yes	Weed treatments under the EIS would continue in the future within the project areaa measureablereduction in invasive plant competition with understory vegetation.There would be a measurable control of weeds that would reduce the potential for spread by livestock.
Active fire suppression	Yes	Yes	Yes	Fire suppression would have a measureable reduction inthe short-term loss of forage caused by wildfire, but there would be a measureable reduction of the long term benefits to understory forage production created by wildfire.
Forest Wide Travel Management Planning	Yes	Yes	NO	Not detectable

Resource Indicator: Meeting Riparian Management Objectives

Figure18: Meeting Riparian Management Objectives Cumulative Effects

Project	Overlap In Time Space		Measurable Cumulative Effect?	Extent, Detectable?
Recreation Activities	Yes	Yes	No	The effects would be too small to measure

Project	Overlap In Time Space		Measurable Cumulative Effect?	Extent, Detectable?
The implementation of the 2013 Allotment Management Plan (AMP)	Yes	Yes	Yes	The ongoing implementation of the AMPwould have a measureable reduction in livestock impacts to riparian areas.
Noxious Weed Controlunder the Okanogan-Wenatchee National Forest Invasive Plant Treatment EIS	Yes	Yes	Yes	Weed treatments under the EIS would continue in the future within the project area with a measurable reduction in invasive plant competition with understory vegetation.
Active fire suppression	Yes	Yes	Yes	Fire suppression would have a measurable reduction in the potential for wildfire to open the riparian area.
Forest Wide Travel Management Planning	Yes	Yes	No	Not detectable

Resource Indicator: Reduced Range Management Access

Figure19: Loss of Range Access Cumulative Effects

Project	Overlap In Time Space		Measurable Cumulative Effect?	Extent, Detectable?
Recreation Activities	Yes	Yes	No	Not detectable
The implementation of the 2013 Allotment Management Plans	Yes	Yes	No	Not detectable
Noxious Weed Control	Yes	Yes	No	Not detectable
Active fire suppression	Yes	No	No	Not detectable
Okanogan-Wenatchee National Forest Access and Travel Management Plan	Yes	No	Yes	As roads would be closed to motorized use unless designated open, there would be a measurable reduction in range management access. Authorized OHV access on certain closed roads would lessen the impact.

Conclusion

The cumulative effect of past, present, and reasonably foreseeable future actions and the proposed thinning treatments and transportation changes in Alternatives 2 and 3 would have both adverse and beneficial impacts to Range Resources.

Forage Availability - Understory Forage Production

The continued implementation of the 2013 Lookout Mountain AMP, with grazing strategies designed to alternate the season of use to provide for proper pasture rest or deferment, would help to sustainunderstory forage production. With the implementation of the Invasive Treatment

EIS, more weed management options would be available to control invasive plants in the confer understory. Controlling weeds would allow the establishment and sustainability of desirable plants and reduce the potential of spread from livestock grazing. Active fire suppression, when successful in keeping fires small, would have a short-term benefit to the understory forage but a reduction in the long-term benefit of overstory removal which would increase understory vegetation. A long-term, moderate, beneficial, impact is expected

Meeting Riparian Management Objectives
The continued implementation of the 2013 Lookout Mountain AMP with riparian management requirements would help reduce impacts to riparian areas.Continued maintenance of fences constructed to eliminate cattle access to streams in early season would have a major beneficial impact. With the implementation of the Invasive Treatment EIS, more weed management options would be available to control invasive plants in the uplandswhich would sustain or increase upland vegetation and help draw cattle away from riparian areas. Active fire suppression, when successful in keep the fires small, would reduce the potential for wildfire to consume the riparian vegetation creating more open cattle access.The suppression of fires will continue to limit the availability of long-term transitory range but will increase the likelihood that riparian areas will remain intact. A long-term, moderate, beneficial, impact is expected.

Reduced Range Management Access
The cumulative effect of past, present, and reasonably foreseeable future actions would have a minor impact on range management access. Only the Access and Travel Management Planwould have a cumulative effect. Authorized OHV access on certain closed roads would lessen the impact. A minor, long-term, adverse impact is expected.

Compliance with LRMP and Other Relevant Laws, Regulations, Policies and Plans

Alternatives 2 and 3 would be compliant with the Okanogan National Forest Plan standards and guidelines for achieving range management objectives and Northwest Forest Plan Standards and Guidelines for management in riparian areas. Management objectives would be met to protect rangeland resources and continue the management of the affected grazing Allotment while providing for forest health.

Summary

Forage Availability - Understory Forage Production

Alternative 1 wouldcontinue the trend of closed canopy forest stands and the availability of understory forage would continue to decrease slowly limiting livestock use patterns and distribution. Livestock use within the project area would be more concentrated in areas of open access and productive forage. Range management road access would remain relatively the same and access would continue to be provided for relatively efficient administration and permittee livestock management.

Alternative 2 and 3 would have a short-term decrease in available forage disturbed by ground-based harvest systems (2-3 years). In the long term (approximately 20 years), with implementation of design criteria and weed management, transitory forage production would

increase, improving livestock distribution and reducing riparian impacts. Thinning treatments would produce over 9000 acres of transitory range by opening the conifer overstory as well as dense patches of young conifers in the understory. Transitory range would continue to fluctuate. As time passes, the increase in available transitory forage would be reduced as the tree canopy closes. Shrubs, herbs and grasses would become less abundant due to the corresponding increase in canopy cover and associated increased shading (Naumburg and DeWald 1999, Host 1988, McConnell and Smith 1970). The average transitory range duration for an average conifer stand in the Northwest area is approximately 20 years (Baumgartner 1987).

Meeting Riparian Management Objectives

Alternative 1 would continue the trend of increased forest stand density and more large woody debris within the riparian areas resulting in fewer openings and more limited cattle access routes.Fuel loading would continue to increase with a higher risk of wildfire within the riparian areas leading to an increase in cattle access.

Alternatives 2 and 3 would have no-harvest buffers combined with winter logging along Riparian Reserves which would be beneficial in attaining riparian management objectives.The soil disturbed by project activities in harvest units adjacent to the perennial streams would be seeded with grasses which would help draw cattle away from perennial riparian areas. Opening the forest stands would increase available forage outside of riparian areas. The permittee would continue to maintain the upland water developments. Range management practices such as riding; proper salting, and maintaining allotment fences would also reduce the potential for additional livestock impacts to riparian areas.

Also under Alternative 2 and 3, road system changesthat would remove portions of road from riparian reserves would reduce access to the affected stream segments. The combination of opening the dense forest canopy and decommissioning roads leading to the riparian areas would reduce livestock access to riparian areas with alternative 3 having the greatest benefit. Coarse Woody Debris Enhancement would have an added benefit of limiting cattle access to the stream. The design criteria for underburning would restrict active lighting near riparian areas and sustain the riparian vegetation. Allotment management would continue to meet allowable use standards on the allotment and range management practices would continue to be implemented to meet riparian objectives.

Reduced Range Management Access

Under Alternative 1, the transportation system would continue to provide for relatively efficient administration and permittee livestock management. Livestock would continue to be able to access remote forage by using roads that are relatively free of obstacles.

Under Alternatives 2 and 3, range management access would decreasein the long term (approximately 20 years).With implementation of road closure and decommissioning designs to maintain OHV access, impacts to range management would be minimized. Livestock access to important forage would be maintained, and impacts of past road construction near riparian areas would be reversed through decommissioning. Alternative 3 would have the highest impact on reducing range management access. Management access would be reduced with the implementation of the action alternatives, but management adjustments would be made through the continued implementation of the Allotment Management Plan.

Proposed changes in road maintenance levels that would result in road closures or decommissioning would reduce the efficiency of administration and management but effective management would be retained by authorized OHV access on ML2- Administrative Use roads and travel access by horseback. Maintenance costs associated with the clearing of down trees and other debris on closed and decommissioned roads would further reduce management efficiency. However, the impact of the action alternatives would be a relatively low reduction in access across the allotment. It is expected that the implementation of Alternatives 2 and 3 would still provide for the effective management of the grazing allotments for the affected permittees and the District.

Degree to Which the Alternatives Address the Issues

Figure20:Summary comparison of how the alternatives address the Issues

Issue	Indicator/Measure	Alt 1	Alt 2	Alt 3
Proposed thinning treatments will effect cattle grazing	Acres of forest canopy opened	0	9782	9782
	Acres of soil disturbance	0	98	98
	Miles of road changes that limit access to riparian areas	0	4.41	6.78
	Acres of proposed harvest within or adjacent to Riparian Reserves	0		
Reduced Range Management Access	Miles of access to transitory range lost	0	31	54
	Miles of open road access lost	0	4.86	67

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